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ABSTRACT

As part of a series of studies assessing micro-teaching and video recording in vocational and technical education, this study was designed as a field test of those techniques in inservice vocational teacher education. The two techniques were tested at three sites in New York State and involved the collection of data in terms of teacher performance, teacher satisfaction, and teacher education and direction assessment. A two-member panel of judges for each site rated the teachers' videotaped pretest and posttest teaching sessions using a critique form on teaching a complete lesson. The teacher satisfaction data were collected on a satisfaction scale completed by the teachers after the posttest taping session. The teacher educators completed questionnaires and the directors provided their reactions by letter. Based on analysis of these data, no statistical differences were found in teaching performance and teacher satisfaction between each of the three sets of two treatment groups. However, all five teacher educators endorsed the microteaching format for adoption in the methods courses, indicating that video recording was not necessarily an essential component. It was also recommended that microteaching sessions include high school-level persons as students.
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Research and Development Series No. 62

Assessment of Micro-Teaching and Video Recording in Vocational and Technical Teacher Education: Phase VII--

Feedback Techniques in Inservice Methods Courses

VT 014 220

The Center for Vocational and Technical Education
The Ohio State University, 1900 Kenny Road, Columbus, Ohio 43210

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RESEARCH AND DEVELOPMENT SERIES NO. 62

ASSESSMENT OF MICRO-TEACHING AND VIDEO RECORDING IN VOCATIONAL AND TECHNICAL TEACHER EDUCATION: PHASE VII--

FEEDBACK TECHNIQUES IN INSERVICE METHODS COURSES

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NOVEMBER, 1971

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PREFACE

The Center has been engaged in a series of studies in the project "Assessment of Micro-Teaching and Video Recording in Vocational and Technical Education" to find more effective and efficient ways of using these two techniques in programs of vocational teacher education. This report describes the seventh of the series, a field test of the feasibility of using micro-teaching and video recording as a means for improving the effectiveness of vocational inservice teacher education courses. It is hoped that vocational and technical teacher educators and researchers will find the results of the study interesting and useful.

The study was conducted by The Center in cooperation with the vocational and technical teacher education extension services at two universities in the State of New York. We are indebted to Dr. Gordon G. McMahon, Chairman and Professor of Vocational Technical Education, State University College of Oswego; Dr. Donn Billings, Director of Vocational and Technical Teacher Education, and Charles Staehle, teacher educator, City University of New York, for providing the setting for and assisting with the study.

We wish to acknowledge the following persons from The Center for their services in completing the study: Dr. Calvin J. Cotrell, principal investigator; Dr. Charles R. Doty, associate investigator; Raymond H. Reisenger, graduate research associate and coordinator of the study; and Niyazi Karasar, graduate research associate.

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Robert E. Taylor
Director
The Center for Vocational
and Technical Education

FOREWORD

This report is the seventh in a series conducted from September, 1967 to October, 1969 by The Center for Vocational and Technical Education. The series of studies in the project, "Assessment of Micro-Teaching and Video Recording in Vocational and Technical Teacher Education," were feasibility tests and demonstration and field tests conducted in collaboration with several vocational teacher education institutions. The investigators believe that those who are interested in developing and testing feedback techniques for teacher education will find these reports helpful.

The investigators wish to thank the panel members who volunteered their time to evaluate the 160 videotaped teaching sessions. The panel members were Warren Weiler, retired state supervisor of vocational agriculture in Ohio; Russell Jordan, director of education, Columbus Technical Institute, Columbus, Ohio; Frank Oliverio, assistant state supervisor of trade and industrial education in Ohio; William Bauer, assistant state supervisor of technical education in Ohio; and Russell Riley and Richard Johnston, Trade and Industrial Education Services, Academic Faculty of Vocational-Technical Education, The Ohio State University.

Special recognition and appreciation are offered to the instructors of the inservice teacher education courses: Gerald F. Gregory and Santo P. Marzullo at the Rochester site, George F. Dennis and Raymond Schoeberlein at the Elmira site, and Ruth Bullwinkle at the New York City site. Appreciation is also expressed to Robert W. Crosby for providing field technician services in Rochester. The cooperation of all teachers who participated is gratefully acknowledged.

The investigators are most appreciative of the encouragement and administrative support of this effort provided by the director of The Center, Dr. Robert E. Taylor; the coordinator for development, Dr. Donald C. Findlay; the coordinator of project utilization and training, Dr. Aaron J. Miller; and the coordinator of research, Dr. Edward J. Morrison. The assistance of a consultant, Dr. Dorothy C. Ferguson, in manuscript revision and synthesis of reviews, is gratefully acknowledged. We also appreciate the assistance of the many supporting personnel of The Center and particularly the editorial director, John Meyer, and his staff.

Calvin J. Cotrell
Charles R. Doty

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SUMMARY

As part of the series of studies assessing micro-teaching and video recording in vocational and technical education, the study reported herein was designed as a field test of applications of these techniques in inservice vocational teacher education. The study was conducted at three sites in New York State--Rochester, Elmira, and New York City--extension centers of the State University College of Oswego and the City University of New York, which offered a vocational teacher education course in the methods of teaching during the second semester in 1969.

Two different techniques were tested at each site, involving 75 inservice teachers and five teacher educators. At the Rochester site, 25 teachers were randomly assigned by two teacher educators to one of two treatment groups: 1) the conventional technique, which consisted of teaching 10- to 15-minute practice sessions in class to peers and receiving feedback from peers and the teacher educator; and 2) field recording, which involved making videotape recordings of 10- to 15-minute teaching sessions in actual classrooms and replaying the tapes during the methods class with feedback and analysis from peers and the teacher educator. At Elmira, 19 teachers were randomly assigned by two teacher educators to one of two treatment groups: 3) micro-teaching with high school-level persons as students and receiving feedback from peers and the teacher educator; and 4) micro-teaching with high school students and receiving feedback from video replay, peers, and the teacher educator. The teacher educator at the New York City site randomly assigned 31 teachers to one of two treatment groups: 5) micro-teaching with peers as students and receiving feedback from peers and the teacher educator; and 6) micro-teaching with peers as students and receiving feedback from video replay, peers, and the teacher educator.

Data were collected in three categories, teaching performance, teacher satisfaction, and teacher educator and director assessment. A two-member panel of judges for each site rated the teachers' videotaped pretest and posttest teaching sessions using a critique form on teaching a complete lesson. The teacher satisfaction data were collected on a satisfaction scale completed by the teachers after the posttest taping session. The teacher educators completed questionnaires and the directors at each site provided their reactions by letter. Analyses of variance, analyses of covariance, and t-tests were computed with the appropriate data; and comparisons were made between the two treatment groups at each site.

No statistical differences were found in teaching performance and teacher satisfaction between each of the three sets of two treatment groups. All five teacher educators endorsed the micro-teaching format for adoption in the methods courses, indicating that video recording was not necessarily an essential component. It was also recommended that the micro-teaching sessions include high school-level persons as students.

ASSESSMENT OF MICRO-TEACHING AND VIDEO RECORDING IN VOCATIONAL AND TECHNICAL TEACHER EDUCATION: PHASE VII--

FEEDBACK TECHNIQUES IN INSERVICE METHODS COURSES

CHAPTER I

BACKGROUND OF THE STUDY

In many states, it often happens that competent tradesmen, technicians, and engineers enter vocational teaching in secondary public schools with a minimum of preparation in professional education, perhaps only a one-week preservice workshop. Helping these persons acquire teaching skills after they have been employed as full-time teachers represents a challenging problem for teacher educators.

To provide the teacher education necessary for these inservice vocational teachers, a series of courses, including a methods course, is often required and offered on university and college campuses or by itinerant teacher educator services at local schools. Teacher educators from the staffs of state departments, universities, or local school districts provide the instruction. It is essential that the content and activities of the inservice methods courses be relevant to the needs of the vocational teachers to provide a satisfactory means for developing their teaching skills. In this respect, the methods courses should include opportunities for the teachers to participate in practice teaching sessions and for the teacher educators to observe the teachers' actual classroom teaching.

THE SERIES OF STUDIES

Two recently developed innovations which have contributed much to teacher education are micro-teaching and video recording techniques. The Center for Vocational and Technical Education has been engaged in a series of studies to find more effective and efficient ways of using micro-teaching and video recording in programs of vocational teacher education. Six previous studies were conducted to test the feasibility of video recording as a feedback device and included variations on micro-teaching, learner populations, and evaluation instruments. Seventh in the series, the present study incorporated the results of the prior studies and was designed as a field test of these innovations in vocational inservice teacher education.

PURPOSE OF THE STUDY

Concern for the need to develop the skills of teaching in vocational teachers who have not had adequate preparation in professional education led to the design of the study as a field test of the feasibility and applicability of micro-teaching and video recording techniques for improving the effectiveness of in-service teacher education methods courses. Specifically, the study was designed as a field test of the following innovations in the practice teaching sessions for providing feedback opportunities in an inservice methods course:

1. The use of video recording of actual classroom teaching.
2. The use of video recording of micro-teaching sessions with high school-level persons as students.
3. The use of video recording of micro-teaching sessions with peers (other members of the methods class) as students.

RESEARCH QUESTIONS

The following six questions were formulated for investigation:

1. In a methods class setting, is there a difference between the performance of teachers who teach peers and receive feedback from their peers and the teacher educator and those who receive feedback from their peers, the teacher educator, and video recordings of their actual high school classroom and laboratory teaching sessions?
2. Is there a difference between the performance of teachers who receive video feedback and those who do not in a methods class where they experience micro-teaching of high school students and receive peer and teacher educator feedback?
3. Is there a difference between the performance of teachers who receive video feedback and those who do not in a methods class where they experience micro-teaching of peers and receive peer and teacher educator feedback?
4. Do teachers engaged in each of the six feedback techniques improve their performance?
5. Will the teachers involved in each of the feedback techniques differ in satisfaction with their experiences?

6. How will the teacher educators and directors of the extension programs assess the implementation of the feedback techniques in the teacher education courses?

RELATED STUDIES

The acceptance of micro-teaching and/or video recording as a means of effecting change in teaching performance is no longer seriously debated. How best to implement the process is the focus of attention.

The work of Aubertine (1964) and Olivero (1964) documented the notion that learners (teacher trainees) need some type of feedback to know what they have done well and what must be done to improve. Bush and Allen (1964), in developing micro-teaching and videotape techniques, pursued the investigation of feedback techniques and their effects on teaching performance, emphasizing the new media and "real," controlled micro-teaching. Cruickshank (1967) adapted the new media to a simulation experience which included teaching to peers.

Another view was expressed by Blanke (1967), in defining the Michigan-Ohio Regional Education Laboratories (MOREL). About 75 to 80 percent of their effort involved three separate techniques--simulated skill training, micro-teaching, and interaction analysis. Using Taba's conceptualization of teaching, MOREL concentrated on teaching style and feedback, convinced that practice of a teaching skill and evaluative feedback are necessary to effect change.

There is also a concern with the cosmetic nature of videotape viewing and the familiarization with self needed prior to realistic self-confrontation. Sensitive and careful attention to the manner in which a videotape is introduced and its use in problem solving was urged by several writers (Bruner, 1964; Acheson, 1964).

CHAPTER II

PROCEDURES IN THE STUDY

In choosing the site for the conduct of the study, several criteria were established. A survey was made of teacher educators and state directors of vocational education to determine who among those contacted had the necessary facilities, population, and interest to take part in the study. From the number of states willing to participate, New York was selected for this particular field testing effort because its statewide vocational teacher education extension program could provide the needed vocational teachers, instructors, equipment, and facilities.

THE THREE SITES

Consultation with the directors of vocational and technical education at the State University College of Oswego and Manhattan Community College (part of the City University of New York) led to the decision to conduct the study at three of the vocational teacher education extension centers served by these two institutions. The sites chosen were at Rochester and Elmira, extension centers for Oswego, and New York City, served by Manhattan Community College.

Rochester. The vocational teacher education extension center located in the city of Rochester served teachers from a predominantly metropolitan, industrial environment. Two courses in methods of teaching, with two different instructors, were selected for participation in the study. The Rochester site provided the setting for testing the first research question, the conventional, peer teaching technique as opposed to the field recording technique for feedback.

Elmira. The vocational teacher education extension center located in the city of Elmira served teachers from a changing rural environment. Two courses in methods of teaching, with two different instructors, were selected for participation in the study. The Elmira site provided the setting for testing the second research question, teaching high school students with as opposed to without video feedback.

New York City. The vocational teacher education extension center located in New York City served teachers from one of the

largest cities in the world with all the complexities of a metropolitan environment. One course in methods of teaching, with one instructor teaching two separate sections, was selected for participation in the study. The New York City site provided the setting for testing the third research question, teaching peers with as opposed to without video feedback.

TREATMENT GROUP DESCRIPTIONS

The six teacher education techniques and their assignment to each site were planned in cooperation with the state personnel from New York at a preliminary orientation meeting. Treatment groups 1 and 2 were located at the Rochester site, groups 3 and 4 at Elmira, and 5 and 6 at New York City (See Figure 1).

Rochester. The teachers involved in the conventional technique (treatment group 1) each taught three 10- to 15-minute micro-lessons to their peers during the inservice class sessions and received evaluative feedback from their peers and the instructor of the course.

At scheduled intervals, each of the teachers involved in the field recording technique (treatment group 2) had video recordings made of three 10- to 15-minute micro-teaching sessions in their own schools with their own students in ongoing classes. The three videotapes were brought to the inservice class sessions and were replayed, with the peers and instructor providing evaluative feedback.

Elmira. The teachers involved in the micro-teaching without video feedback technique (treatment group 3) each taught eight five-minute micro-teaching lessons to a group of four high school students and received evaluative feedback from the peers and instructor of the inservice course.

The teachers involved in the micro-teaching with video feedback technique (treatment group 4) each taught eight five-minute micro-teaching lessons to a group of four high school students. These sessions were videotaped and replayed during the inservice course. Evaluative feedback was provided by peers and the instructor.

New York City. The teachers involved in the micro-teaching without video feedback technique (treatment group 5) each taught five five-minute micro-lessons to peers during the inservice class and received evaluative feedback from the peers and instructor.

The teachers involved in the micro-teaching with video feedback technique (treatment group 6) each taught five five-minute micro-lessons to a group of four peers. These sessions were videotaped and replayed during the inservice class. Evaluative feedback was provided by the peers and instructor.

Treatment Group	Description	Number of Teachers	Number of Teaching and Feedback Sessions*
Rochester			
1	Conventional technique: Teaching peers; 10-15 minute sessions; with feedback from peers and instructor.	12	3
2	Field recording technique: Recording of actual school instruction (10-15 minutes); viewed in course; providing self-evaluation and peer and instructor feedback by means of video replay.	13	3
Elmira			
3	Micro-teaching with high school students; feedback from peers and instructor.	10	8
4	Micro-teaching with high school students; feedback from video replay, peers, and instructor.	9	8
New York City			
5	Micro-teaching with peers as students; peer and instructor feedback.	15	5
6	Micro-teaching with peers as students; feedback from video replay, peers, and instructor.	16	5

*Does not include the pretest and posttest teaching sessions or feedback received on the posttest teaching session or the skill presentation given after the pretest teaching session, which were not part of the actual teacher education course.

Figure 1. Treatment Groups at Selected Sites

PARTICIPANTS

The participants in the study included vocational teachers and teacher educators from the three sites, high school students at the Elmira site, and the panels of judges.

Teachers. A total of 75 secondary-level vocational teachers took part in the study, 25 in the Rochester area, 19 from Elmira, and 31 from New York City. These teachers, with an average of two years of teaching experience, represented three areas of vocational education: trade and industrial education, technical education, and health occupations education.

Teacher educators. The five instructors (teacher educators) who participated in the study were experienced vocational teacher educators and had previously taught the methods course (entitled "Demonstration Teaching" in the vocational education extension program). There were two instructors at Rochester, two at Elmira, and one in New York City.

High school students. At Elmira, eleventh- and twelfth-grade high school students were employed to serve as pupils in the micro-teaching sessions for both treatment groups.

Panel of judges. Three two-member panels of judges were selected to evaluate the teaching performance of the teachers in the study. Criteria for selection included a minimum of a master's degree in education, vocational certification, three years of teaching experience at the secondary or post-secondary level, and two years of supervisory experience.

EXPERIMENTAL DESIGN

The experimental design used in the study was a pretest/posttest design with the teachers at each site randomly assigned to one of the six treatment groups. Within this design were repeated teaching and feedback sessions, as illustrated in Figures 2, 3, and 4.

Treatment Group 1	R	O_1	SK	O_2	X	O_3	X	O_4	X	O_5
Treatment Group 2	R	O_1	SK	O_2	X	O_3	X	O_4	X	O_5

R = Randomization of teachers to treatment groups
O_1 and O_5 = Pretest and posttest measurements of teaching performance
O_2, O_3, O_4 = Teaching sessions
SK = Teaching skill instruction after pretest measurement
X = Feedback sessions

Figure 2. Experimental Design--Rochester

Treatment Group 3 R O_1 SK O_2 X O_3 X O_4 X O_5 X O_6 X O_7 X O_8 X O_9 X O_{10}

Treatment Group 4 R O_1 SK O_2 X O_3 X O_4 X O_5 X O_6 X O_7 X O_8 X O_9 X O_{10}

R = Randomization of teachers to treatment groups
O_1 and O_{10} = Pretest and posttest measurements of teaching performance
O_2 - O_9 = Teaching sessions
SK = Teaching skill instruction after pretest measurement
X = Feedback sessions

Figure 3. Experimental Design--Elmira

Treatment Group 5 R O_1 SK O_2 X O_3 X O_4 X O_5 X O_6 X O_7

Treatment Group 6 R O_1 SK O_2 X O_3 X O_4 X O_5 X O_6 X O_7

R = Randomization of teachers to treatment groups
O_1 and O_7 = Pretest and posttest measurements of teaching performance
O_2 - O_6 = Teaching sessions
SK = Teaching skill instruction after pretest measurement
X = Feedback sessions

Figure 4. Experimental Design--New York City

MEASUREMENT INSTRUMENTS

For purposes of data collection, all teachers participating in the study taught a five-minute lesson on demonstrating a manipulative skill both at the beginning and at the end of the study. These lessons were videotaped and sent to The Center for evaluation by the panels of judges.

Three data-gathering instruments were used in the study, one used by the panels to evaluate the videotaped teaching sessions, one completed by the participating teachers to determine their satisfaction with their experiences, and the third completed by the five instructors to determine their reactions and opinions based on their experiences.

The critique form on teaching a complete lesson was designed to measure the teacher's ability to teach a complete lesson through using the four-step method of teaching: introduction, presentation, application, and evaluation (See Appendix A). Used by the three panels to evaluate all teachers' videotaped pretest and posttest sessions, the 16-item instrument included ratings on whether the teacher did or did not accomplish each task and on the degree of

the accomplishment. The instrument was also used by other participants of the teaching sessions to provide evaluative feedback to the teacher. The critique form was designed for student use, which forced the raters using the form to make their appraisals of the teaching from a student's point of view.

The satisfaction scale, a 29-item instrument, was completed by the participating teachers after the posttest session (See Appendix B).

The five instructors who taught the methods courses completed the questionnaire form at the end of the study (See Appendix C).

In addition to the above data-gathering instruments, several teaching-skills instruments were provided to the teachers and instructors to serve as instruction guides and as devices for evaluating the practice teaching lessons during feedback sessions. These instruments included the teaching skills of introducing a lesson, oral questioning, and demonstrating a manipulative skill.

CONDUCT OF THE STUDY

The initial steps taken to insure the smooth operation of the study involved orientation meetings with the instructors from the three sites and preparation and demonstration of the instructional materials to be used with the teachers in the study.

Procedures for control. After the pretest videotaping sessions, the instructors presented to their classes information on the teaching skill of teaching a complete lesson. For this presentation, they were provided written materials and a model instructional videotape; similar materials were also provided for the teaching skills of demonstrating a manipulative skill, introducing a lesson, and oral questioning.

Random assignment of teachers to treatment groups was made by the instructors. At the Rochester site the two instructors each randomly divided their class into two treatment groups, creating a balance of instructors with treatment groups, with each instructor having equal influence on both treatment groups. The instructors at Elmira randomly divided their classes in the same manner. At the New York City site, the instructor randomly selected teachers enrolled for the course to form two sections, and each section was randomly assigned to a treatment group.

To ensure that the teachers at each site taught the required number of times and evaluated their teaching sessions with the critique form on teaching a complete lesson, the instructors sent all completed forms to The Center where they were tabulated to follow the progress of each treatment group.

Communication between the investigators and the instructors (teacher educators) at the three sites was handled by telephone and confirming letters.

Panel procedures. The six members of the panels of judges also took part in an orientation session explaining the study and were given an opportunity to familiarize themselves with the critique form on teaching a complete lesson. They then began practicing using the instrument to measure teaching performance by evaluating video-recorded micro-lessons selected from previous studies. Each panel practiced evaluating until there was close agreement between the two members. Agreement was usually reached after each panel had viewed and evaluated three videotaped five-minute teaching sessions. Then, each panel began evaluating the video-recorded teaching sessions of this study. To reduce the chance of bias entering into the panel ratings, each panel rated the pretest and posttest teaching sessions in a random order. This procedure prevented panel members from knowing whether they were viewing a teacher's first or last teaching session.

Equipment and facilities. One of the problems in conducting the study involved insuring compatability of video recording equipment, i.e., a recording from one brand of equipment being replayed on another brand or the same brand with a different video system. Each site had Ampex equipment to replay the instructional model tapes and either an Ampex or Sony system for preparing the pretest and posttest videotape recordings for The Center.

PROCEDURES FOR DATA ANALYSIS

Several statistical tests were computed on the data generated from the measurement instruments on teaching performance and teacher satisfaction. The following tests were performed on the data from each site:

1. An analysis of variance test to determine the reliability of panel members' ratings on the critique form on teaching a complete lesson.

2. An analysis of variance test on the pretest teaching performance scores (ratings on the critique form) to determine if the groups differed from each other prior to the study.

3. An analysis of covariance test on the posttest teaching performance scores (using the pretest scores as the covariate) to determine if the two teacher education feedback techniques at each site produced different effects on teaching performance.

4. A paired t-test on pretest to posttest gain scores on teaching performance within each treatment group to determine if the teachers made significant improvement.

5. An analysis of variance multiple-range test on teachers' responses on the satisfaction scale to determine if the treatment groups differed in teacher satisfaction with the experience (Winer, 1962).

CHAPTER III

RESULTS OF THE STUDY

The results of the data collection and analysis are presented in this chapter. Included are the findings relative to the effects on teaching performance of the several teacher education feedback techniques, the participating teachers' expressed satisfaction with their experiences, and the teacher educators' and directors' assessments of the experience.

EFFECTS ON TEACHING PERFORMANCE

The panels of judges' ratings on the critique form on teaching a complete lesson were the sources of the data analyzed to answer the first four research questions. The critique form contained two scales: the accomplished scale (quantitative measure), which was scored 0 = did not accomplish and 1 = accomplished, and the degree of accomplishment scale (qualitative measure), which was scored 0 = did not accomplish, 1 = very poor, 2 = poor, 3 = average, 4 = good, and 5 = excellent accomplishment. A test of reliability of panel ratings indicated that both scales yielded similar information on teaching performance, and the statistical tests were computed on the degree of accomplishment scale mean scores. The inter-rater reliability correlation coefficients ranged from .65 to .90 on this scale (See Appendix D, Table 1).

Rochester. The Rochester site provided the data to answer the first research question, which dealt with comparing the conventional technique (treatment group 1) with using field recordings (treatment group 2). A multiple-range test of analysis of variance, computed on the pretest scores, indicated that there were no significant differences between the two treatment groups (See Appendix D, Table 2). The analysis of covariance computed with the pretest scores as the covariate revealed that no significant differences existed between the two groups at the end of the study (See Appendix D, Table 3).

Elmira. The Elmira site provided the data to answer the second research question, comparing the use of micro-teaching sessions with high school-level students, with one group not receiving video feedback (treatment group 3) and the other receiving the video feedback (treatment group 4). A multiple-range test of analysis of variance, computed on the pretest scores, indicated

that there were no significant differences between the two treatment groups (See Appendix D, Table 2). The analysis of covariance computed with the pretest scores as the covariate revealed that no significant differences existed between the two groups at the end of the study (See Appendix D, Table 3).

New York City. The New York City site provided the data to answer the third research question, comparing the use of microteaching sessions with peers as students, with one group not receiving video feedback (treatment group 5) and the other receiving the video feedback (treatment group 6). A multiple-range test of analysis of variance, computed on the pretest scores, indicated that there were no significant differences between the two treatment groups (See Appendix D, Table 2). The analysis of covariance computed with the pretest scores as the covariate revealed that no significant differences existed between the two groups at the end of the study (See Appendix D, Table 3).

Research question four. To answer the fourth research question, which dealt with the effects of each of the techniques on teaching performance, paired t-tests were computed for all six treatment groups. The results revealed that a significant change in teaching performance occurred only for treatment group 5, the inservice teachers who taught their peers and did not receive video feedback (See Appendix D, Table 4).

EFFECTS ON TEACHER SATISFACTION

The teachers' responses to the Satisfaction Scale were the sources of the data analyzed to answer the fifth research question, dealing with differences in the teachers' satisfaction with their experiences. The multiple-range tests of analysis of variance computed for the two treatment groups at each of the sites revealed that no significant differences existed between any of the sets of two groups (See Appendix D, Table 5).

TEACHER EDUCATORS' AND DIRECTORS' ASSESSMENTS

The teacher educators' responses to the perceptions form and the question sheet provided the basis for arriving at an answer to the sixth research question (See Appendix C). The directors' assessments were obtained by letter and interview.

Rochester. The two instructors of the methods course at the Rochester site indicated that they preferred the field recording technique because of the "apparent good results and satisfaction among the teachers," as well as "the opportunity to see and hear the lesson and use it again for comparison at a later time." Both teacher educators judged field recording as significantly influencing

the teachers' attitudes toward self-improvement, basing their observations on the teachers' discussions among themselves in analyzing their teaching sessions.

One teacher educator felt that his performance was enhanced by using the field recording technique, and the other felt that his part became that of a manager and technician rather than that of an educator. He also felt that he did not have time to preview the tapes thoroughly before the class met. Given the opportunity, both would adopt the field recording technique in the methods class and emphasized the values of the use of micro-teaching with video feedback.

Although they both endorsed the field recording technique, the two teacher educators also stressed the need for sufficient time for preparation and careful scheduling and adherence to time schedules.

The director of the Oswego extension program evaluated the technique at the Rochester site as a step in improving the methods courses. One major point of improvement he emphasized was the reduction of antagonism between the teacher and his peers or teacher educator. With video feedback, the teacher was able to make an immediate self-evaluation before anyone had a chance to make any criticism.

Elmira. The teacher educators at the Elmira site preferred the micro-teaching with video feedback technique because "it gave the teachers the opportunity to observe their own behavior as well as the students." However, both teacher educators indicated that micro-teaching with actual students was a primary factor for teacher improvement; video feedback was a good tool but not as necessary as micro-teaching with actual students. Both felt that their performance was enhanced using micro-teaching with video feedback in the methods class because of "the use of an additional teaching tool to show rather than attempt to tell."

Advantages of the technique which the two instructors noted were that the teachers had more opportunities to teach and to observe others teaching, that they had practice in lesson planning, and that they had the opportunity for immediate feedback.

Disadvantages recorded by the teacher educators were concerned with pressures of time and teachers planning too many lessons, disadvantages partially due to experimental controls. The teacher educators and the teachers wanted the time of the micro-teaching lessons increased to seven or eight minutes. Another disadvantage or occurrence which was pointed out was the boredom that developed after the seventh teaching session for those teachers who had observed both the teaching sessions and the video replays.

The director of the Oswego extension program, in his assessment of the techniques at the Elmira site, evaluated micro-teaching, video recording, and teaching high school students as having tremendous results and potential. He stressed the fact that micro-teaching forces the teachers to plan, replan, and plan again, a weakness with most teachers. This fact was supported by almost every teacher's evaluation of micro-teaching as being of definite benefit to him. Video feedback provided the teacher the opportunity to point out his own weaknesses and then ask for advice or additional criticism from the instructor or the members of the class. As for teaching high school students, the director was firmly convinced that there is no substitute; the reactions and evaluations of actual students are a must for effective teacher education.

New York City. The teacher educator at the New York City site preferred the technique involving video feedback, stating, "The teaching quality of teachers using video has improved tremendously. They have been their own critics and have struggled to improve." The teacher educator reported that few teachers felt the techniques they experienced were unrealistic or that they were not useful in their own teaching situations.

Advantages and disadvantages noted by the teacher educator at the New York City site were similar to those expressed by those at Rochester and Elmira: self-evaluation opportunities, lesson planning, immediate feedback, and time pressures.

The director of the Manhattan extension program, in his assessment of the techniques at the New York City site, observed that video feedback represented an improved system of evaluating the methods course by eliminating some of the tension and much of the subjectivity involved in the conventional system.

CHAPTER IV

CONCLUSIONS AND RECOMMENDATIONS

As part of the series of studies conducted at The Center for Vocational and Technical Education to assess micro-teaching and video recording in vocational and technical teacher education, the study reported here was designed as a field test to determine the feasibility and applicability of these two techniques for providing feedback opportunities in an inservice methods course. Conclusions and recommendations for the study are based on the results of the statistical analyses and the opinions and reactions of the participants and those who conducted the study.

CONCLUSIONS

1. With certain scheduling adjustments, the six feedback techniques tested in the study were feasible innovations in the inservice methods course.

2. Each of the six feedback techniques provided a satisfactory teacher education experience for the teachers involved.

3. Since the micro-teaching format was an inherently effective teacher education technique, the inclusion of video recording was not necessarily essential.

4. Using high school-level persons as students in the micro-teaching sessions was effective for providing feedback to teachers.

RECOMMENDATIONS

1. With appropriate scheduling adjustments for individual needs, the feedback techniques tested in the study were recommended for inclusion in the inservice methods course.

2. The micro-teaching technique, with or without video recording, would be an effective teacher education tool in the inservice methods course.

3. To obtain maximum teacher satisfaction with micro-teaching, provision should be made for instruction in the micro-teaching format, including selecting appropriate topics and lesson planning.

4. Whenever possible, high school students should participate in the micro-teaching sessions. Students could either be hired or recruited as volunteers from local high school vocational or nonvocational service organizations.

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GLOSSARY OF TERMS

Complete lesson. An act of teaching incorporating the four steps of instruction: introduction, presentation, application, and evaluation.

Field recording. The videotape recording of a teacher teaching on the job, in his classroom or laboratory.

Micro-teaching. A scaled-down teaching session, five to 12 minutes of teaching to four students, in which the teacher participates in the full sequence of the micro-teaching cycle: plan, teach, critique (feedback), replan, reteach, critique.

Peer. In the context of this study, a member of the inservice methods courses who participated in the study as a teacher and served as a student in sessions requiring teaching to peers.

Video feedback. The procedure used in the study which involved preparing videotape recordings of the micro-teaching sessions to provide opportunities for all reviewers, including the teachers in the appropriate treatment groups, to view a replay of the teaching session during the critique and analysis portion of the micro-teaching cycle and to evaluate change in teaching performance.

APPENDIX A

CRITIQUE FORM

TEACHING A COMPLETE LESSON

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CRITIQUE FORM
TEACHING A COMPLETE LESSON

A complete lesson consists of four steps: 1) Introduction (Preparation), 2) Presentation, 3) Application, and 4) Testing (Evaluation). The introduction of a lesson "sets the stage" for your participation in the activity which is to follow. The introduction should help to inspire you to want to accomplish the objectives of the lesson. The presentation of a lesson provides you with essential information. If the teacher has presented the information or skill properly and you have been a good observer and listener, you should be ready to attempt to apply it. The presentation should include a summary for you to review the key points and an opportunity for you to express your ideas and beliefs concerning the lesson.

The application step is that part of the lesson in which you immediately apply the new information or skill. The teacher should observe you practicing and provide encouragement, correction, or additional information to guide you through the experience.

The testing step of the lesson measures your retention of essential information or skills that you will use in the future.

The lesson should include all four steps; however, because of the limited time, the application and testing stage may be brief. It should be understood that further application and testing would be required for complete learning to take place depending on the nature of the materials.

Directions: The following items will be used by you to evaluate your teacher's teaching. If the teacher did not accomplish the item, you will only mark "Did Not Accomplish." If the teacher did accomplish the item, you will mark "Accomplished" and then mark the column which describes how well the teacher "accomplished" the item.

DID NOT ACCOMPLISH	ACCOMPLISHED	DEGREE OF ACCOMPL.				
		VERY POOR	POOR	AVERAGE	GOOD	EXCELLENT

Did the Teacher in the Lesson:

1. Have and use necessary instructional materials that appealed to me and helped me gain a clear picture of what was being taught? (e.g., equipment, materials or audio-visual aids)

2. Provide opportunity for my response and participation?

3. Vary the pace and methods of presenting the lesson so that I understood and remained interested?

4. React favorably toward my questions, answers, and comments; and avoid repeating what I said?

5. Present the lesson so that I could easily follow and understand the lesson from start to finish?

Did the Teacher in the Introduction:

6. Link the lesson to my past knowledge or experience so that I could accept the objectives on my own terms?

7. State exactly what the objective/s are in terms of what I am expected to do, why the objective/s are important to me, how I am to achieve the objectives and when I will know that I have achieved the objectives?

	DID NOT ACCOMPLISH	ACCOMPLISHED	DEGREE OF ACCOMPL.				
			VERY POOR	POOR	AVERAGE	GOOD	EXCELLENT
8. Help me to acquire an interest in the lesson? (For example: Did you want to learn what was to be presented in the lesson?)							
Did the Teacher in the Presentation:							
9. Talk to me and not to the instructional materials? (Note: In some presentations; e.g., one where a teacher is manipulating materials or operating machinery, the teacher must direct his attention to these, but the teacher can also make the student feel that he is receiving direct attention.)							
10. Present each idea or step in the proper sequence, making each stand out?							
11. Present only one idea, or method of doing an operation, at a time? (Or did the teacher present two or more ideas, or methods of doing an operation, which confused you?)							
12. Present the information or skill with ease?							
13. Have me summarize the key points rather than doing it himself?							
14. Clarify any key points not clear to me?							
Did the Teacher in the Application:							
15. Observe me practicing (mentally or physically applying) and provide encouragement, correction or additional information to guide me?							

	DID NOT ACCOMPLISH	ACCOMPLISHED	DEGREE OF ACCOMPL.				
			VERY POOR	POOR	AVERAGE	GOOD	EXCELLENT

Did the Teacher in Testing: (Evaluation)

16. Provide an opportunity for me to show how well I had learned?

Comments: (What can the teacher do to improve the lesson?)

Teacher _____ Date _____

Observer _____ Lesson (1, 2, etc.) _____

APPENDIX B
TEACHER SATISFACTION SCALE

_____
(Name)

SATISFACTION SCALE FOR
EXPRESSION OF SATISFACTION WITH FEEDBACK TECHNIQUE

The purpose of this Satisfaction Scale is to allow you to rate the following statements which best describe your feelings of satisfaction and/or dissatisfaction with the feedback technique in which you were involved this semester or quarter.

Even though we have asked for your name at the top of this form (later to be coded), this scale will be treated as confidential material by the research staff, in that the names of persons and schools will not be identified with particular ratings at any time to anyone.

Directions: When completing the Satisfaction Scale, think in terms of the technique in which you were involved. You are to rate the statements on a 9-point scale, circling the number 9 for those statements you consider extremely characteristic with respect to the technique in which you were involved, and circle 1 for those statements you believe to be extremely uncharacteristic of this technique.

1 2 3 4 5 6 7 8 9

Extremely Uncharacteristic — Fairly Uncharacteristic — Relatively Neutral — Fairly Characteristic — Extremely Characteristic

---

CAUTION: Always repeat the following phrase before reading each statement:

"The technique": _____

_____

Then circle the number which best describes your rating for each statement in the column on the right, as shown in the example below.

1. helped me to look objectively at my teaching. 1 2 3 4 (5) 6 7 8 9

SATISFACTION SCALE FOR
EXPRESSION OF SATISFACTION WITH FEEDBACK TECHNIQUE

The feedback technique:

1.	helped me look objectively at my teaching.	1	2	3	4	5	6	7	8	9
2.	helped me look objectively at the teaching of the other teacher trainees.	1	2	3	4	5	6	7	8	9
3.	caused me to be quite apprehensive during the first few weeks.	1	2	3	4	5	6	7	8	9
4.	stimulated me to do my best work.	1	2	3	4	5	6	7	8	9
5.	helped me integrate educational theory with classroom teaching (if inservice).	1	2	3	4	5	6	7	8	9
6.	provided adequate opportunity for the teacher educator and me to exchange ideas.	1	2	3	4	5	6	7	8	9
7.	was an unsatisfactory method of instruction for me as a teacher trainee.	1	2	3	4	5	6	7	8	9
8.	was typically oriented toward identifying teacher trainees' failures.	1	2	3	4	5	6	7	8	9
9.	helped to establish a relaxed, open mood of mutuality between me and the teacher educator.	1	2	3	4	5	6	7	8	9
10.	helped to establish a relaxed, open mood of mutuality among the teacher trainees.	1	2	3	4	5	6	7	8	9
11.	encouraged me to feel like a co-educator along with the teacher educator.	1	2	3	4	5	6	7	8	9
12.	left me in doubt as to what was expected of me.	1	2	3	4	5	6	7	8	9
13.	allowed time for private communication between the teacher educator and me.	1	2	3	4	5	6	7	8	9

14.	limited the teacher educator's opportunity to gain a representative picture of my teaching experience.	1	2	3	4	5	6	7	8	9
15.	helped the teacher trainees to place their problems in proper perspective.	1	2	3	4	5	6	7	8	9
16.	allowed the teacher trainees to feel successful.	1	2	3	4	5	6	7	8	9
17.	included factors which were somewhat disturbing to persons being taught.	1	2	3	4	5	6	7	8	9
18.	required excessive teacher trainee preparation.	1	2	3	4	5	6	7	8	9
19.	required excessive teacher educator preparation.	1	2	3	4	5	6	7	8	9
20.	required more time than seemed necessary.	1	2	3	4	5	6	7	8	9
21.	stimulated self-analysis of my own performance as a teacher trainee.	1	2	3	4	5	6	7	8	9
22.	needed more contacts between myself and the other teacher trainees.	1	2	3	4	5	6	7	8	9
23.	was a frustrating experience for me.	1	2	3	4	5	6	7	8	9
24.	limited the teacher trainees' and my use of a variety of approaches to teaching.	1	2	3	4	5	6	7	8	9
25.	helped the teacher trainees and me improve our teaching.	1	2	3	4	5	6	7	8	9
26.	resulted in a superficial evaluation of my teaching.	1	2	3	4	5	6	7	8	9
27.	was highly satisfactory once the procedures and working relationships were established.	1	2	3	4	5	6	7	8	9

28.	created a tense atmosphere between the teacher trainees and me.	1	2	3	4	5	6	7	8	9
29.	created a tense atmosphere between the teacher educator and me.	1	2	3	4	5	6	7	8	9

APPENDIX C

TEACHER EDUCATOR'S PERCEPTIONS

TEACHER EDUCATOR'S PERCEPTIONS

The following was designed to obtain your perceptions of teacher trainee reactions to the experiment. Your own feelings as a teacher educator who has used two feedback techniques should provide us with information needed to plan any additional work at The Center and to initiate other types of experiments which may be needed. There are no right or wrong answers in this approach to obtaining information. You are asked, as a teacher educator, to make some choices, and to follow these choices through, beginning with these thoughts:

> This term I have taught two groups or classes in two different ways. My teacher trainees have been exposed to new and different teacher training processes. Now that the experiment is concluded, the decision must be made about how I would teach this class again, given the opportunity. As I think about it now, this decision would hinge upon several considerations.

Please react to the following questions:

1. As a teacher educator I preferred _____ method of teaching this course. The reason for my preference is _____

   _____

   If I had all the services, assistance, or authority to change things, this method would, would not be preferred.
   (circle one)

If you circled would, please continue on this page	If you circled would not please turn to question 6

2. Do you feel that the teacher trainees' attitude toward self-improvement was influenced more significantly by this method? Yes, No
   (circle one)

2a. Why is it that you feel that this happened? _____

_____

_____

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3. Do you feel that your performance as a teacher educator was enhanced as a result of using this method?

Yes, No
(circle one)

3a. What specifically is the most important factor which contributed to this change? _____

_____

_____

4. Do you feel that one method is more expensive than the other? Yes, No
(circle one)

If your answer is yes, would you feel that the difference in the use of additional funds was worthwhile?

Yes, No
(circle one)

How would you justify this position? _____

_____

_____

5. Would you adopt this method as the way to teach this class again, given the opportunity? Yes, No
(circle one)

STOP HERE _____

6. The changes in method which I would make would include _____ My reasons for making these changes would be _____

_____

_____ If these changes were made, the method would be improved to the point where I would prefer it. This method then would have

_____

_____

7. Do you feel that the teacher trainee's attitude toward self-improvement would then be influenced more significantly by this change of method? Yes, No
(circle one)

What is it that you feel would make this happen? _____

_____

_____

_____

8. Do you feel that your performance as a teacher educator would improve as a result of this change? Yes, No
(circle one)

What is it that you feel would make this happen? _____

_____

9. Would you adopt this changed method as the way to teach this class again, given the opportunity? Yes, No
(circle one)

10. For the methods you used for the course, do you feel that one method is more expensive than the other?
Yes, No
(circle one)

10a. If your answer is yes, would you feel that the difference in the use of additional funds was worthwhile?
Yes, No
(circle one)

How do you justify this position? _____

_____

_____

10b. If your answer is no, how would you justify this position? _____

_____

_____

Teacher Educator

Teacher Educator
Question Sheet

Date

We are interested in your reactions to the teaching technique which you were involved in during this experiment. Would you please give us your reactions to the following questions?

1. What do you consider the main advantages and disadvantages of the feedback technique in which you were involved? (Please use the reverse side for additional comments.)

Method

Advantages	Disadvantages

(Please use the reverse side if needed)

2. Please specify any additional criticisms.

3. What were the oral complaints and comments of the teacher trainees?

4. How could the project staff have given you better preparation to initiate such a program?

5. What problems did you encounter in using videotape recording equipment?

(Please use the reverse side if needed)

APPENDIX D
TABLES

TABLE 1
RELIABILITY OF PANELS' RATINGS
CRITIQUE FORM ON TEACHING A COMPLETE LESSON
BOTH PANEL MEMBERS AT EACH SITE

Site	Scale	Pretest Scores	Posttest Scores
Rochester	Accomplished	.97	.97
	Degree of Accomplishment	.89	.90
Elmira	Accomplished	.78	.70
	Degree of Accomplishment	.75	.83
New York City	Degree of Accomplishment	.76	.65

TABLE 2
MULTIPLE-RANGE ANALYSIS OF VARIANCE
PANELS OF JUDGES' RATINGS ON CRITIQUE FORM
DEGREE OF ACCOMPLISHMENT SCALE, PRETEST SCORES

Site	Source	S.S.	M.S.	d.f.	F	Value of F α .05
Rochester Treatment Groups 1 and 2 (N = 25)	Between Groups	2.720	2.720	1	.03	4.28
	Within	1959.340	85.189	23		
Elmira Treatment Groups 3 and 4 (N = 19)	Between Groups	47.334	47.334	1	.35	4.45
	Within	2306.614	135.683	17		
New York City Treatment Groups 5 and 6 (N = 31)	Between Groups	307.887	307.887	1	4.16	4.19
	Within	2146.209		29		

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TABLE 3
ANALYSIS OF COVARIANCE
PANELS OF JUDGES' RATINGS ON CRITIQUE FORM
DEGREE OF ACCOMPLISHMENT SCALE, POSTTEST SCORES

Site	Source	S.S.	M.S.	d.f.	F	Value of F $\propto$ .05
Rochester Treatment Groups 1 and 2 (N = 25)	Between Groups	258.682	258.682	1	2.52	4.30
	Within	2254.759	102.489	22		
Elmira Treatment Groups 3 and 4 (N = 19)	Between Groups	241.784	241.784	1	1.47	4.49
	Within	2624.227	164.014	16		
New York City Treatment Groups 5 and 6 (N = 31)	Between Groups	170.946	170.946	1	3.95	4.20
	Within	1213.064	43.324	28		

TABLE 4
PAIRED t-TEST
PANELS OF JUDGES' RATINGS ON CRITIQUE FORM
DEGREE OF ACCOMPLISHMENT SCALE

Site and Group	Pretest / Posttest	d.f.	t
Rochester Treatment Group 1 (N = 12)	47.92 / 51.46	11	.87
Rochester Treatment Group 2 (N = 13)	48.58 / 45.12	12	-1.13
Elmira Treatment Group 3 (N = 10)	49.55 / 47.20	9	-.51
Elmira Treatment Group 4 (N = 9)	46.39 / 53.06	8	1.49
New York City Treatment Group 5 (N = 16)	43.09 / 53.44	15	5.64***
New York City Treatment Group 6 (N = 15)	49.40 / 49.37	14	-0.01

***Significant at .01 level.

TABLE 5
MULTIPLE-RANGE ANALYSIS OF VARIANCE
TEACHER SATISFACTION SCALE

Site	Source	S.S.	M.S.	d.f.	F	Value of F α .05
Rochester Treatment Groups 1 and 2 (N = 25)	Between Groups	.044	.044	1	.31	4.28
	Within	3.682	.142	23		
Elmira Treatment Groups 3 and 4 (N = 19)	Between Groups	.335	.335	1	.78	4.45
	Within	7.298	.429	17		
New York City Treatment Groups 5 and 6 (N = 31)	Between Groups	.049	.049	1	.08	4.19
	Within	15.419	.593	29		